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The interaction behavior patterns of male secondary physical education instructors with high-skilled and low-skilled students

Brian Francis Streeter
Ithaca College

THE INTERACTION BEHAVIOR PATTERNS OF MALE SECONDARY PHYSICAL EDUCATION INSTRUCTORS WITH HIGH-SKILLED AND LOW-SKILLED STUDENTS

by

Brian Francis Streeter

An Abstract

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ABSTRACT

This study was conducted to compare the teaching interaction behavior patterns of male secondary physical education instructors with high-skilled and with low-skilled students. Fifteen secondary physical education instructors from central and western New York served as subjects. Each instructor was asked to rank his students from high skill ability to low skill ability. From each instructor's class, 10 students, five from the top 33% of the class representing the high-skilled group and five from the bottom 33% of the class representing the low-skilled group, were randomly selected to participate in the study, totaling 150 student participants. A videotape recorder with a microphone was used to collect data on the 15 teachers, in three consecutive classes with the same students. The Dyadic Adaptation of Cheffers' Adaptation of Flanders' Interaction Analysis System (DAC) was used to code the interaction patterns between the teacher and students participating in the study. The data obtained from the coding of DAC were then transposed onto computer cards for computer analysis. Multivariate analysis of variance was used to determine significant differences in teaching interaction behavior patterns with high-skilled and with low-skilled students. Discriminant function analysis identified those DAC variables that accounted for a significant amount of variance between the groups. Univariate analysis of variance was used to determine on which variables the groups

differed significantly when each variable was considered by itself, independent of the other eight variables. The selected level of significance was .05. The results of these tests found significant differences between the instructor with high-skilled students and the instructor with low-skilled students which led to the rejection of the null hypothesis which stated that there would be no significant difference in the teaching interaction behavior patterns of male secondary physical education instructors with high-skilled and with low-skilled students. The high-skilled group had a greater percentage of teacher praise, teacher acceptance of ideas and actions, teacher questioning, student interpretive response, and student initiated behavior. The low-skilled group had a greater percentage of teacher directions, teacher criticism, and student predictable response.

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A Thesis Presented to the Faculty of
the School of Health, Physical
Education and Recreation
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In Partial Fulfillment of the
Requirements for the Degree
Master of Science

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by
Brian Francis Streeter
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Ithaca College
School of Health, Physical Education and Recreation
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CERTIFICATE OF APPROVAL

MASTER OF SCIENCE THESIS

This is to certify that the Master of Science Thesis of

Brian Francis Streeter

submitted in partial fulfillment of the requirements for the degree of Master of Science in the School of Health, Physical Education, and Recreation at Ithaca College has been approved.

Project
Thesis Advisor:

Committee Member:

Candidate:

Chairman, Graduate
Programs in Physical
Education:

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Chapter 1

INTRODUCTION

Throughout the 1900's, theorists in education have discussed the positive and negative outcomes of teachers' expectations on pupils' intellectual development and potential. Clark (1963), when writing about the effects of student-teacher relationships on the students' achievements, referred to the self-fulfilling prophecy by saying:

> If a teacher believes that a child is incapable of being educated, it is likely that this belief will in some way be communicated to the child in one or more of the many forms of contacts inherent in the teacher-pupil relationship. (p. 183)

"An expectation or prediction which initiates a series of events that causes the original expectation or prediction to become true is known as a self-fulfilling prophecy" (Martinek & Mancini, 1979, p. 61). In other words, students who are expected to perform well and be high achievers in the classroom, and who are treated by their teachers in certain ways, may live up to the teachers' expectations and may actually become high achievers. Likewise, if the teacher expects a particular student to be a low achiever and behaves inappropriately towards that student, then the student may begin behaving in certain ways and may fulfill the prophecy of becoming a low achiever. Simply stated, the self-fulfilling

prophecy reflects that individuals will behave as they believe they are expected to behave; the student behavior may be manifested in either a positive or a negative direction.

In a recent study, Brophy and Good (1974) extensively reviewed over 60 studies directly concerned with the question of teacher expectancy effects. They concluded that the work done by a large number of the investigators, using a variety of methods over the past several years, has definitely established that teacher expectations can and do function as self-fulfilling prophecies. These investigators believe that if expectancy effects occur and operate in the classroom, they may also be evident in the gymnasium, even though the nature of the activity is different. To observe activity in gymnasiums, Cheffers' Adaptation of Flanders' Interaction Analysis System (CAFIAS) was developed by John Cheffers. This system is used to observe all interactions which take place in an entire class. However, in order to observe specific students in a class, an adaptation was made to CAFIAS called the Dyadic Adaptation of CAFIAS. This was done by Martinek & Mancini (1978), and allowed for observations to be recorded only when the teacher was interacting with a specific student or students. This study is based on the premise that different patterns of teacher-student interaction in the gymnasium take place as a result of teacher expectations of each student in the class.

Scope of Problem

This study was conducted to compare the teaching

interaction behavior patterns of male secondary physical education instructors with high-skilled and low-skilled students. Fifteen secondary physical education instructors (grades 7 through 12) were videotaped during the January-May, 1980, school term.

Each instructor was asked to rank his students from high skill ability to low skill ability prior to the taping of the first class. The top 33% of the class was designated as having high skill ability; the bottom 33% was identified as having low skill ability. Ten students from each class videotaped were randomly selected to participate in the study, five from each of the two ability levels.

A videotape recorder with a microphone was used to collect data on the 15 teachers in three consecutive classes with the same students. The Dyadic Adaptation of Cheffers' Adaptation of Flanders' Interaction Analysis System (DAC) was used to code the interaction patterns between the teacher and students participating in the study.

Statement of Problem

This investigation was conducted to study the teaching interaction behavior patterns of male secondary physical education instructors with high-skilled and low-skilled students.

Major Hypothesis

There will be no significant difference between the teaching interaction behavior patterns of male secondary physical education instructors with high-skilled students and with low-skilled students.

Assumptions of Study

The following assumptions were made relative to this investigation:

1. The teacher rankings of students were based on the teacher's own ability to determine high skill ability level from low skill ability level.

2. The coding of three consecutive classes was appropriate to yield valid data on the teaching interaction behavior patterns of these teachers with their classes.

3. The skill ability level of each class was equally divided into thirds: high, medium, and low.

4. The teachers were not aware of which numbers on the pinnies represented high skill or low skill ability.

5. The subjects selected were representative of the population of male secondary physical education instructors in New York State.

6. The use of a reliable coder was necessary to obtain an actual representation of the situation.

Definitions of Terms

The following terms were operationally defined for the purpose of this study:

1. Interaction analysis is an observational technique that records the frequency of teacher-pupil interpersonal behaviors (Amidon & Hough, 1967).

2. Flanders' Interaction Analysis System (FIAS) is a system specifically designed to objectively analyze the verbal interaction between teachers and pupils as it occurs in the

classroom (Amidon & Flanders, 1971).

3. Cheffers' Adaptation of Flanders' Interaction Analysis System (CAFIAS) is a validated extension of FIAS, developed to record verbal and nonverbal behaviors and specifically designed for implementation in describing teacher-pupil interaction in classes of physical education (Cheffers, Amidon, & Rodgers, 1974).

4. Secondary physical education instructor is an instructor who is certified to teach in grades 7 through 12.

5. Verbal behaviors are observable, audible human behaviors.

6. Nonverbal behaviors are observable human behaviors that are not expressed verbally.

7. Dyadic Adaptation of Cheffers' Adaptation of Flanders' Interaction Analysis System (DAC) is a validated extension of CAFIAS, developed to test the relationship between teacher expectancies and pupil achievement; the individual child is the focus of analysis (Martinek & Mancini, 1979).

8. Observed teaching behavior is the teaching behavior of the teacher exhibited in the class situation as recorded by CAFIAS.

9. Coder reliability is a consistency of evaluation on the part of the person doing the coding.

10. High skill ability student is an individual who possesses a high level of skill ability, as identified by the instructor.

11. Low skill ability student is an individual who

possesses a low level of skill ability, as identified by the instructor.

Delimitations of Study

The following were the delimitations of this study:

1. Fifteen male secondary physical education instructors were used during the January to May, 1980, school term.

2. Each subject was observed three times while instructing his class.

3. This study used the physical education instructor's own judgment to rank the stuents from high to low skill ability level.

4. This study used one interaction analysis system, DAC, to describe teaching interaction behavior patterns.

5. Ten students, five high skill ability and five low skill ability, were selected from each class that was video-taped.

Limitations of Study

The following were the limitations of this study:

1. The findings may only be valid for male secondary physical education instructors in the central and western New York areas.

2. The findings may only be valid when DAC is used.

3. The findings may only be valid when the students used in the study are randomly selected from the high and low skill ability groups, as ranked by their physical education instructors.

Chapter 2

REVIEW OF RELATED LITERATURE

The literature reviewed for this investigation has its concentration in the following areas: (a) dyadic interaction analysis systems, (b) utilization of dyadic systems in education, (c) utilization of dyadic systems in physical education, and (d) summary.

Dyadic Interaction Analysis Systems

In 1979, Allard stated that educational researchers have been investigating the interactions between teachers and students in classroom settings for almost 50 years. Through the utilization of many types of observational systems, the process of interaction analysis has been used in observing the behaviors transpiring between the teacher and the students.

Brophy and Good (1974), through the implementation of their Teacher-Dyadic Interaction System, were the pioneers of research describing the analysis of teacher behavior directed toward individual students within a regular classroom. The system, according to Good and Brophy (1970), is useful to teachers because it could provide feedback concerning their differential treatment toward male and female students of different human races and from different socio-economic levels.

Good and Brophy (1970), before the development of their system, felt there were many aspects of classroom interaction which could be recorded as dyadic interaction based on the premise that teachers do treat individual children differently.

It was also believed that this system would provide teachers with information regarding which students receive little or no recognition and which students receive primarily negative comments.

Cheffers' Adaptation of Flanders' Interaction Analysis System (CAFIAS) developed in 1972 by John Cheffers was designed for use in physical education classes (Cheffers & Mancini, 1979). This expansion of Flanders' Interaction Analysis System has meant that it can also be used to present a clearer and more sensitive picture of the teaching-learning process in academic classes.

Martinek and Mancini (1979) were interested in looking at the interaction between a teacher and an individual student. In order to obtain such data, dyadic interaction was adapted to CAFIAS. Martinek and Mancini were concerned that many of the interactions were overlooked between the teacher and the individual student. Through the Dyadic Adaptation of CAFIAS (DAC), the specific interactions between the teacher and student could be observed while still using CAFIAS to provide a device to code any behavior categorized as verbal, nonverbal, or both verbal and nonverbal. This allows for a more individualized systematic observation of physical education classes as well as more sensitive observations in a classroom setting.

Two other systems which have been used in looking at dyadic interaction are the Individualized Teacher Behavior Analysis System and the Teacher Approval-Disapproval

Observation Record. Dr. George Lewis (University of Massachusetts) modified both FIAS and CAFIAS into his own system called the Individualized Teacher Behavior Analysis System (Oien, 1979). The system was developed to use in exploring individualized teacher behaviors and to collect data on individual students. The Teacher Approval-Disapproval Observation Record developed in 1973 by White, Beecher, Heller, and Waters (Heller & White, 1975), enables the observer to record the teacher evaluative verbal response, whether it was an approval or disapproval, and whether the response was directed toward a single pupil or a group of pupils.

Allard (1979) believed that with continued use of dyadic systems, the information gathered would benefit the teacher in understanding how much time is being spent with one student in comparison with another.

> Further investigations of this nature are needed because individual patterns of interaction are an important factor to consider when analyzing the performance of any group, and because the extent and nature of difference in the individual's experience are a necessary ingredient (sic) to fully understand the nature of interaction between teacher and student. (Allard, 1979, p. 15)

Utilization of Dyadic Systems in Education

The first study using the Teacher-Child Dyadic Interaction System was conducted by Brophy and Good (1970a). The investigators were concerned with the classroom behaviors of

children of various achievement levels. Four first grade teachers were asked to rank their students in order of expected achievement. Only those students ranked as high or low were used as subjects. The results from this initial study revealed the following: low students sought out the teacher less frequently, the low students had more work related contacts with their teachers, and the low students were reluctant to come to the teacher to discuss their work. A possible reason for the reluctancy of the low students to come to the teacher is because praise and criticism were closely balanced for the high students, whereas the low students averaged six critical comments for every favorable one. There were also large and consistent differences found between the expectancy groups. The high students were found to initiate more public response opportunities and work related private contacts along with giving more correct and fewer incorrect answers than the low students. The students identified as high also had fewer problems per reading turn and received more praise and less criticism than the lows. There was very little difference between the total number of contacts made by the teacher to the high and low students. The measures of teacher-initiated contacts usually favored the lows, but the difference was not found to be statistically significant. However, the results on quantity of contacts were somewhat at variance with those of Good (1970) and Kranz, Weber, and Fishell (1970), who found that teachers gave significantly more response opportunities to the high

students.

In a follow-up study to Brophy and Good (1970a), done by Evertson, Brophy, and Good (1973), the results indicated that the frequencies of teacher interactions with the high and low groups were equal. A second replication done by Brophy, Evertson, Harris, and Good (1973) showed that only a few expectancy group differences were statistically significant. These results failed to substantiate the findings of Brophy and Good (1970b). However, a minority of teachers within each of these studies did show the same pattern of favoritism of high students and inappropriate teaching of low students that was observed in the original study of Brophy and Good (1970b).

> This indicates that susceptibility to teacher-expectations effects is an individual difference variable, and data are needed to identify the teacher characteristics which make teachers more or less susceptible to such effects. (Brophy & Good, 1974, p. 110)

In 1970, Good looked at first grade students whom teachers had singled out as high achievers and low achievers. He found students perceived as high achievers received more response opportunities and more positive feedback than classmates perceived as low achievers.

Kranz et al. (1970) studied the interaction between 11 elementary teachers and their students. The teachers ranked their students as high, medium, or low in

achievement level. The results of this study were similar to Good (1970), indicating that teachers interacted more frequently with the high achieving student than with the low achieving student. This interaction was more positive and facilitative than their interaction with low achievers.

Brophy and Good (1970a) investigated the relationship between teacher expectancies and pupil achievement. Analysis of the results indicated that teachers demanded better performance of the high student as well as praised them more. Further results showed teachers were more likely to accept poor performance from low expectancy students and less likely to praise good performances by these individuals when they occurred. Teachers, when asking questions of their students, tended to either repeat or rephrase the question for the high expectancy student whereas when the low expectancy student was asked a question, the teachers would typically answer the question for him. The amount of praise given when a question was answered correctly, along with the lack of criticism after responding incorrectly, was found to favor the high expectancy students in their study.

In a study by deGroat and Thompson (1949), the high achiever received a disproportionate share of disapproval. Brophy and Good (1974) found evidence which supported these results concerning the amount of praise received or given.

Dalton (1969) observed the teacher-student interaction between fourth grade teachers and the students which the teacher ranked as high expectancy and low expectancy. The

results indicated the teacher was more direct and critical when interacting with the low students, but more indirect when interacting with the high students. In summary, according to Dalton (1969), more appropriate teaching was being given to the high students than the low students.

Similar results were found in studies done by Good (1970), Kranz et al. (1970), and Tyo and Kranz (1973). Tyo and Kranz (1973) in their study looked at the teacher-student verbal interaction in classrooms containing migrant and non-migrant students. Of the students in the study, teachers had lower expectations of the migrant students. The findings were that the teachers had significantly more positive, neutral, and total number of contacts with the non-migrant students.

> These studies indicated that teachers are likely to have more frequent and more positive interactions with students for whom they hold high expectations than with students for whom they hold low expectations. (Brophy & Good, 1974, p. 87)

The results from a study by Good, Sikes, and Brophy (1972) indicated the high students initiated more comments and questions, called out more answers, and received more praise and less criticism than the low students. It was found teachers often failed to give feedback following responses by low students but stayed with the low students more often after they failed to answer the initial question.

Martin and Keller (1976) investigated teacher awareness

of classroom dyadic interaction. Results from their study indicated that teachers had considerable difficulty in estimating the frequency of various types of interaction occurring in their classrooms. Teachers, through their own awareness of their interaction in the classroom, should be able to interact with students in a way which would benefit the student the most. Based on this study by Martin and Keller (1976), "The results provide substantial empirical support for the position that teachers are unaware of classroom interaction" (p. 53).

Utilization of Dyadic Systems in Physical Education

Only in the past few years has dyadic interaction been used in observing the behavior patterns which occur in physical education instruction. Four recent studies, Crowe (1979), Devlin (1979), Oien (1979), and Martinek & Johnson (1979), have used this form of observational system in attempting to focus on teacher behavior directed towards individual students in physical education class settings.

Crowe (1979) investigated teacher expectations and teacher-student interactions through a modification she made in Rosenthal's Four Factor Theory. Teachers of four different physical education classes were asked to rank their students in the order of their physical achievement or skill potential. Through the use of Brophy & Good Interaction Analysis System, these junior high students were observed.

The results from Crowe's study (1979) indicated that high-skilled students were asked as well as given more

opportunities to respond to questions than the low-skilled students. Whether answering the question correctly or not, the high-skilled student was found to receive more evaluative comments and praise than the low-skilled student. Teachers were also found to treat the high-skilled student with more warmth and support. In looking at the level of performance between the two groups, high-skilled students were superior to the low-skilled students, even though the evidence found was not statistically significant to suggest teachers gave more feedback to the designated high achievers. The conclusion was made that the designated high-skilled student received more praise for his performance as compared to the low-skilled student. Crowe's study failed to show any significant difference in the amount of reinforcement given by the teachers to either of the groups.

In the most recent study using DAC, Devlin (1979) was interested in determining if disruptive elementary age children could alter their physical education teacher's direct behavior through the use of specific contingency management skills in an attempt to enhance the child's self-concept. Of the 40 students used in the study, 20 were designated as the treatment group and 20 were designated as the control group. Through the use of DAC, behaviors were assessed between the teachers and both groups, treatment and control. The results of Devlin's study (1979) showed the scores for the treatment group were significantly higher on teacher praise, teacher acceptance, teacher questioning,

and student interpretive responses and significantly lower scores were recorded for the treatment group on teacher direction, teacher criticism, student predictable response, and student initiated behavior. These results led to the conclusion that there was a significant difference in the direct behavior of the physical education teachers toward the group of students who received the treatment and toward to those who were in the control group.

Through the use of the Individualized Teacher Behavior Analysis System, Oien (1979) explored individualized teaching behavior based on student gender. In the distribution of the Individualized Teacher Behaviors across the population, the interaction between the perceived skill levels was observed. There were 22 comparisons made between skill levels. The results showed the categories of praise and encouragement, lecturing, giving directions, and criticizing or justifying authority were directed towards the high skilled student in 16 out of the 22 comparisons.

> The unequal distribution of teacher behaviors directed toward individual students found in this study clearly supports the findings of similar studies previously conducted. (Oien, 1979, p. 25)

Martinek and Johnson (1978) used the Dyadic Adaptation of CAFIAS (DAC) to identify the dyadic interaction which took place between teachers and the high and low expectancy students in physical education instruction. In their study five elementary teachers were asked to rate their students according

to how they expected each student to perform in terms of physical achievement. The top 10 and lowest 10 students from each class comprised the sample of 100 students used in the study. In this study two male and three female teachers served as subjects. There was no significant teacher-sex difference found, allowing these results to be used in comparison to male teachers alone. The results from Martinek and Johnson's study (1979) suggested that teachers frequently approach high achievers as compared to the interaction which occurs between low achievers and their teachers, thus giving high achievers more opportunity to interact with the teacher. These results are in accordance to those found by Brophy and Good (1970) and Crowe (1977). It was found in this study that more praise and supportive encouragement were given to the expected high achievers than to the expected low achievers. Also, the expected high achievers received significantly greater acceptance of ideas and more analytical questions and directions from their teachers than did the low achievers.

> In summary, it is feasible to assume that within a physical education setting high achievers have all the advantages--more attention, more praise, more acceptance, more intellectual stimulation, and a better self-concept. It follows, then, that the physical education teacher should become sensitized to those behavioral mechanisms that mediate expectations which perpetuate success and failure

in children. (Martinek & Johnson, 1979, p. 9)

"The use of DAC in this study also demonstrated the feasibility of its use in future studies concerned with dyadic analysis of physical education and classroom instruction" (Martinek & Johnson, 1979, p. 18).

Summary

Educational researchers have been investigating the interactions between teachers and students in classroom settings for 50 years. Through the utilization of dyadic interaction systems, researchers have begun to observe the behaviors occurring between the teacher and individual students.

There have been four dyadic systems developed for use in interaction analysis. These systems are Teacher-Dyadic Interaction System (Brophy & Good, 1974), Dyadic Adaptation of Cheffers' Adaptation of Flanders' Interaction Analysis System (Martinek & Mancini, 1979), Individualized Teacher Behavior Analysis System developed by Lewis (Oien, 1979), and the Teacher Approval-Disapproval Observation Record developed by White, Beecher, Heller, and Water in 1973 (Heller & White, 1975).

Studies done in the classroom using dyadic systems were completed by Brophy and Good (1970a, 1970b), Good (1970), Kranz, Weber, and Fishell (1970), deGroat and Thompson (1949), Dalton (1969), Tyo and Kranz (1973), and Good, Sikes, and Brophy (1972). General results from these studies revealed that the high-skilled students received more praise, encourage-

ment, attention, questions, and teacher-student contact than low-skilled students. On the other hand, low-skilled students were found to receive more criticism, were reluctant to come to the teacher to discuss their work, and sought out teachers less frequently..

There have only been four studies completed to date that have examined the dyadic interactions taking place in physical education classes. These studies were done by Crowe (1979), Devlin (1979), Oien (1979), and Martinek and Johnson (1979). General results from these studies revealed the high-skilled students were asked more questions as well as given more opportunities to respond, received more praise, were treated with warmth and support, and were given more directions. The results of the low-skilled students were found to be just the opposite from the high-skilled students, especially when looking at the amount of criticism which was directed towards the low-skilled students.

This literature shows a need for this study to be performed. According to Allard (1979), "Further investigations of this nature . . . are a necessary ingredient to fully understand the nature of interaction between the teacher and student" (p. 15).

Chapter 3

METHODS AND PROCEDURES

In this chapter the population from which the subjects and their students were drawn, the testing instrument used to determine the teaching interaction behavior patterns, and the treatment of subjects are described. In addition, the establishment of the coder's reliability, procedure, method of data collection, and the statistical procedures applied to the data are discussed.

Selection of Subjects

The subjects for this study were 15 male secondary physical education instructors (grade 7 through 12) from the central and western New York areas. From each instructor's class 10 students were chosen to participate in the study, giving a total of 150 student participants. Class instructors ranked their students from high skill ability to low skill ability prior to the taping of the first class. The top 33% of the class were designated as high-skilled students; the bottom 33% were designated as the low-skilled students. Ten students were then randomly selected to participate in the study, five from each of the two categories.

Testing Instrument

The Dyadic Adaptation of Cheffers' Adaptation of Flanders' Interaction Analysis System (DAC) was used to measure the teaching interaction behavior patterns between the instructor and the students identified in the class. This system was developed so the focus of the analysis would be on the

individual child. DAC is an adaptation of CAFIAS, a system which was developed to objectively record both verbal and nonverbal behaviors. Through the use of CAFIAS, behaviors are measured every 3 seconds or as often as they change. With DAC, the only behavior recorded is the interaction occurring between the instructor and the specific students identified in the class. The data collected were coded by an observer trained in the use of DAC.

Coder Reliability

In order to determine the coder's reliability, two videotapes of two randomly selected teachers were coded on two independent observation sessions. The top 10 cells were ranked and the Spearman rank-order correlation was applied to the rankings (see Appendix A).

Procedure

Fifteen physical education instructors were contacted to participate in this study. A class schedule for each subject was obtained by the investigator. Each instructor was informed they would be videotaped on three consecutive classes having the same students in his class (see Appendix B). Each videotaped session was 30 minutes in length. During this time period the instructor wore a microphone which should not have interfered with his teaching activities. The instructor was asked to rank his students from high skill ability to low skill ability prior to the taping of the first class. Based on the results of the instructor's rankings, 10 students were randomly selected to participate in the study. Five students

from the top 33% of each class represented the high skill ability students, and five from the lower 33% of each class represented the low skill ability students. With permission of the students (see Appendix C), the investigator gave each student a pinnie with a number on it for the purpose of identification on the videotape. The same students participated in the study on all 3 days, wearing the pinnie with the same number given to them on the first day.

Method of Data Collection

Data for the analysis were collected from the three videotapes made of every subject. The videotapes were coded by an expert coder using DAC. The behaviors were recorded on a tally sheet in sequential order.

Scoring of Data

The data collected from the coding of DAC by Dr. Victor H. Mancini were transferred to a recording sheet by placing a tally in the appropriate cell beside the Group-Teacher-Student identification number. After all the data were transferred to the recording sheet, they were scored for each individual student separately through the following sequence: (1) each cell total was summed and recorded by writing over the tallies, (2) each student received a total score for the total number of tallies, (3) each cell received a percentage by dividing each cell total by the student's total score, and (4) each percentage was combined under the verbal and nonverbal cells of each of the 18 DAC behaviors used in this study, arriving at nine percentages for each

student. These percentages were then transposed onto separate data cards for each student for computer analysis. The DAC behaviors, silence and confusion, were not of interest to the researcher, so they were not used in the analysis of the data.

Treatment of Data

A multivariate analysis of variance was performed to determine whether differences in teaching interaction behavior patterns, as identified by DAC, existed between the teacher and the high-skilled students, and the teacher and the low-skilled students. Results from this procedure were analyzed by a discriminant function analysis to determine the relative contribution of each variable to the between group difference. A univariate analysis of variance was also performed on each of the nine DAC variables to determine on which variables the groups differed significantly when each variable was considered by itself, independent of the other eight variables. The hypotheses were tested at the .05 level of significance.

Summary

The 15 subjects in this study ranked their students from high skill ability to low skill ability. Ten students from each class, five high skill ability, and five low skill ability, were randomly selected to participate in the study. A videotape recorder with a microphone was used to record each subject on three separate occasions for 30 minutes per session.

Dr. Victor H. Mancini used the Dyadic Adaptation of

Cheffers' Adaptation of Flanders' Interaction Analysis System to code the teaching behavior between the teacher and the students wearing the pinnies. The results obtained from coding were transposed onto computer cards for computer analysis.

Multivariate analysis of variance was used to determine significant differences in teaching interaction behavior with high-skilled students and with low-skilled students. The DAC variables that accounted for a significant amount of variance between the groups were determined through discriminant function analysis. A univariate analysis of variance was also performed on the nine DAC variables to determine on which variables the groups differed significantly when each variable was considered by itself, independent of the other eight variables.

Chapter 4

ANALYSIS OF DATA

In this chapter are presented the results that were found when comparing the teacher interaction behavior patterns with high-skilled and with low-skilled students. The Dyadic Adaptation of CAFIAS (DAC) was utilized to measure the behaviors of the teachers and students. All of the categories inherent in CAFIAS are the same for the DAC system (see Appendix D), and its variables will be referred to as DAC variables throughout this chapter. Within this chapter will also be included the assessment of coder reliability for this investigation and a chapter summary.

Coder Reliability

In order to determine the reliability of the coder for this investigation, two videotaped class sessions for each of two randomly selected teachers were coded on two independent observation sessions. A Spearman rank-order correlation for the two independent observations was determined for the top 10 cell concentrations (see Appendix A). The mean of the correlations was .974 which was sufficient to indicate that the coder, Dr. Victor H. Mancini, was reliable. Data from the comparison are illustrated in Table 1.

Analysis of Teachers' and Students' Behaviors

A multivariate analysis of variance (MANOVA) was performed on the high-skilled group scores of the nine DAC variables with the low-skilled group scores to determine if the teachers' interactions with the high-skilled group and with the low-

Table 1

Coder Reliability*

Physical Education Teacher	r_s	M
Teacher One	.985	.974
Teacher Two	.964	

*Coder reliability was determined by a Spearman rho correlation on the top 10 cells from the coding of teaching behaviors for two independent observations.

skilled group were significantly different. The overall difference between the high-skilled group and the low-skilled group for all nine DAC variables taken simultaneously was statistically significant, $F(9,112) = 14.419$, $p < .001$. Therefore, it can be concluded that the teachers' interactions with the high-skilled group and with the low-skilled group were significantly different on the scores of the nine DAC variables. Hence, the null hypothesis which stated that there would be no significant difference between the teaching interaction behavior patterns of male secondary physical education instructors with high-skilled students and with low-skilled students was rejected.

Discriminant function analysis was used to determine the contribution of each of the nine DAC variables to the significant multivariate between-group difference. Teacher acceptance contributed 36.21% to the discriminant function. This was followed by teacher praise (32.65%), student initiated behavior (11.78%), and teacher questioning (8.95%). The remaining five variables combined contributed less than 12% to the discriminant function. The results are shown in Table 2.

A univariate analysis of variance was performed on the nine DAC variables to determine on which variables the groups differed significantly when each variable was considered by itself, independent of the other eight variables. Table 3 indicates significant differences at the .05 level on eight of the nine DAC variables.

Table 4 contains the DAC variables' means and standard

Table 2

Discriminant Function Analysis of Nine DAC Variables

Variable	Standardized Discriminant Weight	Squared Discriminant Weight	Percent of Contribution to the Discriminant Function
Teacher Acceptance	.60175	.3621	36.21
Teacher Praise	.57141	.3265	32.65
Student Initiated Behavior	.34332	.1178	11.78
Teacher Questioning	.29920	.0895	8.95
Student Interpretive Response	.19460	.0378	3.78
Teacher Information Giving	.17940	.0322	3.22
Teacher Criticism	-.15189	.0230	2.30
Teacher Directions	.10297	.0106	1.06
Student Predictable Response	-.01598	.0002	.02

Table 3

Univariate Analyses of Variance

For the Nine DAC Variables

Source of Variation	Sum of Squares	df	Mean Square	F
Teacher Praise				
Group	502.33	1	502.33	22.45*
Teacher	2612.56	14	186.61	8.34*
Group x Teacher(GxT)	644.56	14	46.04	2.05*
Error w/GxT	2684.37	120	22.37	
Teacher Acceptance				
Group	983.80	1	983.80	45.33*
Teacher	3073.70	14	219.55	10.18*
Group x Teacher(GxT)	454.90	14	32.49	1.49
Error w/GxT	2604.08	120	21.70	
Teacher Questioning				
Group	433.87	1	433.87	10.93*
Teacher	2193.05	14	156.64	3.94*
Group x Teacher(GxT)	489.08	14	34.93	.88
Error w/GxT	4760.86	120	39.67	
Teacher Information				
Group	86.35	1	86.35	1.56
Teacher	5453.78	14	389.55	7.04*
Group x Teacher(GxT)	1458.29	14	104.16	1.88*
Error w/GxT	6633.81	120	55.28	

Table 3 (continued)

Source of Variation	Sum of Squares	df	Mean Square	F
Teacher Directions				
Group	3254.91	1	3254.91	56.80*
Teacher	7053.80	14	503.84	8.79*
Group x Teacher(GxT)	1835.50	14	131.11	2.28*
Error w/GxT	6876.08	120	57.30	
Teacher Criticism				
Group	82.45	1	82.45	5.29*
Teacher	317.92	14	22.71	1.45
Group x Teacher(GxT)	469.97	14	33.57	2.15*
Error w/GxT	1869.10	120	15.57	
Student Predictable Response				
Group	1943.64	1	1943.64	36.87*
Teacher	20350.71	14	1453.62	27.58*
Group x Teacher(GxT)	2042.44	14	145.88	2.76*
Error w/GxT	6324.76	120	52.70	
Student Interpretive Response				
Group	237.78	1	237.78	5.02*
Teacher	45880.00	14	3277.14	69.16*
Group x Teacher(GxT)	3147.05	14	224.79	4.74*
Error w/GxT	5686.00	120	47.38	

Table 3 (continued)

Source of Variation	Sum of Squares	df	Mean Square	F
Student Initiated Behavior				
Group	248.71	1	248.71	14.22*
Teacher	488.49	14	34.89	1.99*
Group x Teacher(GxT)	172.60	14	12.33	.70
Error w/GxT	2098.28	120	17.48	

*$p < .05$.

Table 4

Means and Standard Deviations of DAC Variables

	High Skill		Low Skill	
Variable	M	SD	M	SD
Teacher Praise	8.231	6.855	4.570	5.769
Teacher Acceptance	8.344	7.568	3.220	5.057
Teacher Questioning	6.630	8.467	3.228	5.375
Teacher Information Giving	18.476	9.710	16.958	9.420
Teacher Directions	14.893	9.747	24.210	10.865
Teacher Criticism	1.618	2.883	3.100	5.253
Student Predictable Response	18.613	12.264	25.813	15.416
Student Interpretive Response	17.675	16.144	15.157	21.879
Student Initiated Behavior	3.717	5.575	1.141	2.492

deviations of the high-skilled and low-skilled groups. These results on Tables 3 and 4 indicate that teacher praise, teacher acceptance of students' ideas and actions, teacher questions, student interpretive response, and student initiated behavior were exhibited a greater percentage of the time in the high-skilled group. Teacher directions, teacher criticism, and student predictable response were exhibited a greater percentage of the time in the low-skilled group.

The top 10 ranked cell frequencies of interaction patterns and their percentage of occurrence for both groups are presented in Table 5. Beneath this table is a description of each interaction pattern shown. The density of tallies in the cells indicated not only predominant teachers' and students' behaviors but also the sequence of those behaviors. The patterns for both the high-skilled and low-skilled groups were dominated by teacher direction followed by student predictable response (6-8). The percentage of occurrence for the low-skilled group was approximately twice the percentage of occurrence for the high-skilled group. The high-skilled then began to follow a pattern of student interpretive response followed by teacher praise, followed by student predictable response followed by teacher information giving and more student predictable response (8-2-8-5-8). In the low-skilled group the behaviors varied from those in the high-skilled group in that their pattern was dominated by teacher information giving followed by teacher directions, followed again by student predictable response along with

Table 5

Summary of Most Frequent Interaction Patterns Among the Top 10 Cells of Physical Education Instructors

High Skill		Low Skill	
Interaction Patterns	Percentage of Occurrence	Interaction Patterns	Percentage of Occurrence
6-8	8.84	6-8	15.33
8\-2	5.94	5-6	8.79
8-5	5.76	8-6	6.44
5-8	5.28	8-5	5.75
5-8\	5.04	6-8\	5.58
5-6	4.79	8\-5	5.34
8-3	4.22	5-5	4.24
5-5	4.02	8-3	3.93
8\-5	3.58	5-8	3.69
8\-3	3.52	8\-2	2.83

Table 5 (continued)

6-8	teacher directions followed by student predictable response
8\-2	student interpretive response followed by teacher praise
8-5	student predictable response followed by teacher information giving
5-8	teacher information giving followed by student predictable response
5-8\	teacher information giving followed by student interpretive response
5-6	teacher information giving followed by teacher directions
8-3	student predictable response followed by teacher acceptance of students' ideas and actions
5-5	extended teacher information giving
8\-5	student interpretive response followed by teacher information giving
8\-3	student interpretive response followed by teacher acceptance of students' ideas and actions
8-6	student predictable response followed by teacher directions
6-8\	teacher directions followed by student interpretive response

more teacher information giving (5-6-8-5).

A few major patterns of difference from Table 5 which need to be emphasized are the following: the high-skilled group was found to have a greater percentage of occurrence of student interpretive response followed by teacher praise (8\-2) than the low-skilled group; a greater percentage of teacher information giving followed by teacher directions (5-6), along with a greater percentage of occurrence of student interpretive response followed by teacher information giving (8\-5), occurred with the low-skilled group.

The patterns exhibited in the top 10 cells for the high-skilled group were student interpretive response followed by teacher acceptance of student's ideas and actions (8\-3) and teacher information giving followed by student predictable response (5-8). Student predictable response followed by teacher directions (8-6) and teacher directions followed by student interpretive response (6-8\) were exhibited as predominant patterns only by the low-skilled group.

Figure 1 illustrates the differences in the occurrence of each of the nine DAC variables, verbal and nonverbal, between the high-skilled group and the low-skilled group. The mean percentages of occurrence of the DAC variables are compared on the bar graph. It was found that the teachers used a greater percentage of verbal and nonverbal praise, acceptance, questions, and nonverbal information giving when interacting with the high-skilled group. When

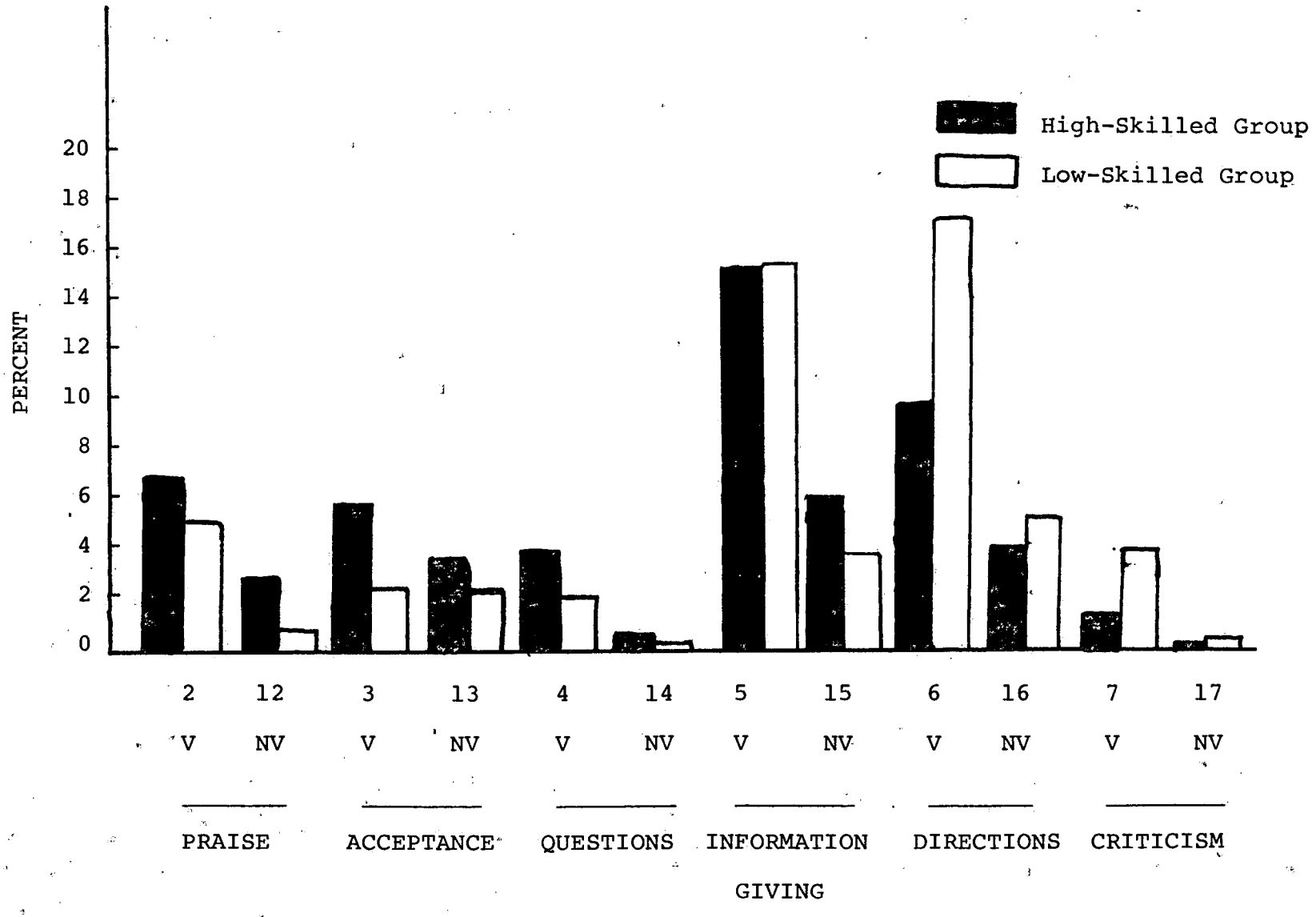

Figure 1. Mean percentage of behavior in each DAC category.

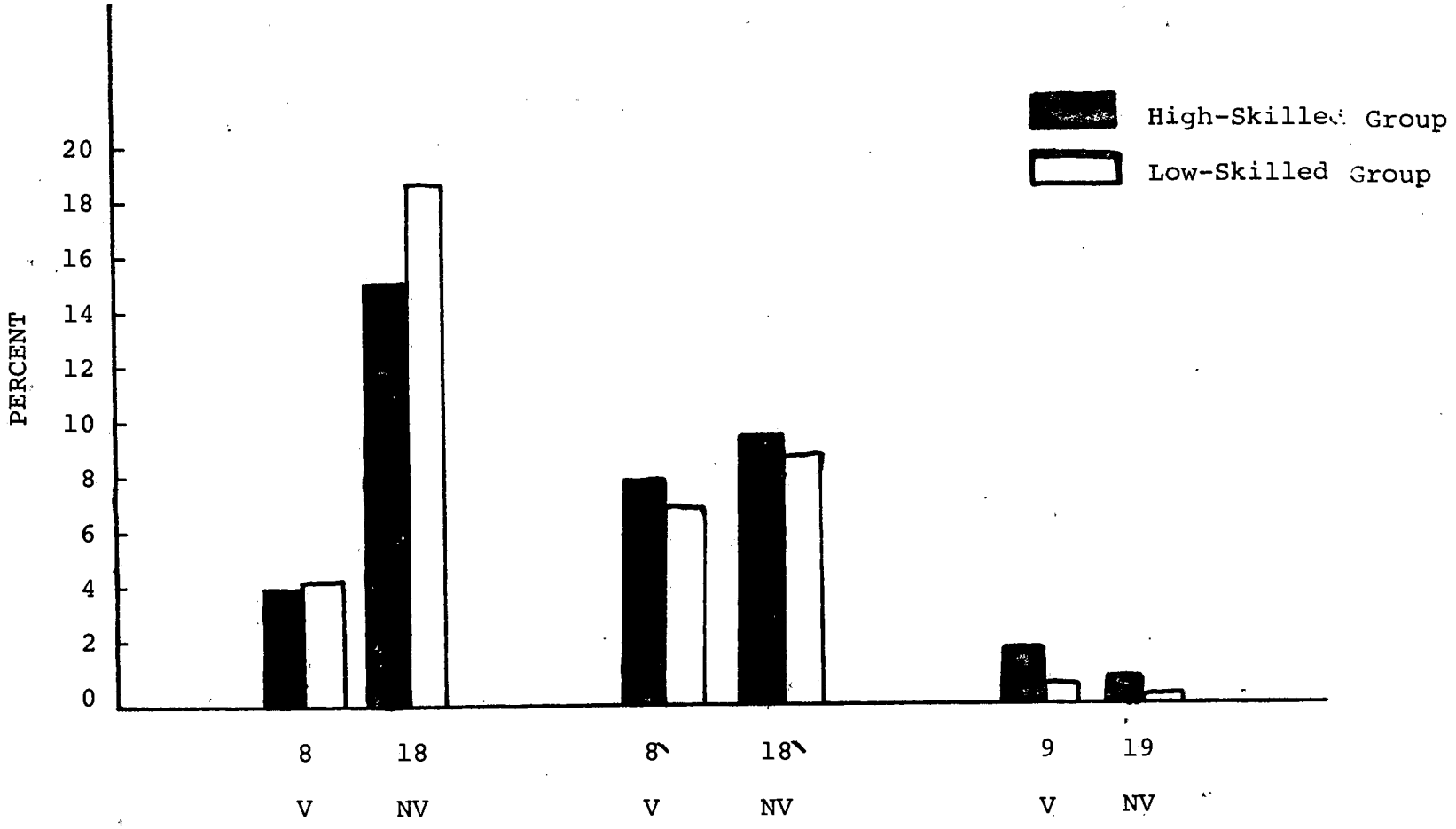

Figure 1. (continued)

interacting with the low-skilled group, a greater percentage of verbal and nonverbal directions, criticism, and verbal information giving occurred. In observing the students' interaction, the high-skilled group was found to have more verbal and nonverbal initiative, along with a broad interpretation of teacher activities. On the other hand, the low-skilled group showed more verbal and nonverbal predictable response.

The time period in which the instructors were observed was constant. During this period of time, the teachers interacted with the high-skilled group 4,548 times in comparison to 2,902 times with the low-skilled group.

Summary

Coder reliability for this study was determined by selecting two videotaped class sessions of two randomly selected teachers and coding them on two independent observation sessions. Spearman rank-order correlations on the two independent observations were determined for the top 10 cell concentrations (see Appendix A). The mean of the correlations was .974 which was sufficient to indicate that the coder was reliable.

A multivariate analysis of variance (MANOVA) was performed on the high-skilled group scores and the low-skilled group scores of the nine DAC variables to determine if the teaching behaviors with the two groups were significantly different. The overall difference between the

high-skilled and low-skilled groups for all nine DAC variables taken simultaneously was statistically significant, $F(9,112) = 14.419$, $p < .001$.

A discriminant function analysis (Table 2) identified teacher acceptance, teacher praise, student initiated behavior, and teacher questioning as contributing over 88% of the between-group variance. A univariate analysis of variance was performed on each of the nine DAC variables (Table 3). On eight of the nine DAC variables, teacher behaviors with the two skill levels were found to be significantly different at the .05 level of significance. Tables 3 and 4 indicate the significant differences, means, and standard deviations of the nine DAC variables used in the present study. Table 5 shows the top 10 interaction patterns of the high-skilled and of the low-skilled groups to be different. The results of these tests led to the rejection of the null hypothesis which stated that there would be no significant difference between the teaching interaction behavior patterns of male secondary physical education instructors with high-skilled and with low-skilled students.

Chapter 5

DISCUSSION OF RESULTS

The present study is the first study to use the Dyadic Adaptation of CAFIAS (DAC) (Martinek & Mancini, 1979) to observe the interaction behavior patterns of male physical education instructors with high-skilled and low-skilled students. This study is only the third study to use DAC to observe interaction taking place between specific individuals or groups of individuals. Martinek and Johnson (1979) utilized DAC to determine teacher expectancy effects on the self-concept of elementary age children. Devlin (1979) implemented DAC to assess the teaching behavior of her subjects with a single student or a small group of no more than four students.

Within this chapter, an overview of statistical results associated with this study and a comparison of those results with other investigations related to it will be provided for the reader.

A multivariate analysis of variance (MANOVA) was performed on the nine DAC variables. The overall difference between the teaching behaviors with the high-skilled and with the low-skilled groups was significantly different, $F(9,112) = 14.419$, $p < .001$. This led to the rejection of the null hypothesis which stated that there would be no significant difference between the teaching interaction behavior patterns of male secondary physical education instructors with high-skilled

and with low-skilled students.

Following the MANOVA, a discriminant function analysis was run. The variables teacher acceptance, teacher praise, student initiated behavior, and teacher questioning were found to account for over 88% of the between-group variance (Table 2).

Univariate analysis of variance (ANOVA) was also performed on each of the nine DAC variables to determine on which variables the groups differed significantly when each variable was considered by itself, independent of the other eight variables. The ANOVA's revealed significant differences on eight of the nine DAC variables at the .05 level of significance (Table 3). These variables were teacher praise, teacher acceptance, teacher questioning, teacher directions, teacher criticism, student predictable response, student interpretive response, and student initiated behavior. In Table 4, the means and standard deviations of the eight variables which were significant can be located for the high-skilled and low-skilled groups. Within the high-skilled group more interaction in the form of teacher praise, teacher acceptance, teacher questioning, student interpretive response, and student initiated behavior can be seen. In the low-skilled group more teacher directions, teacher criticism, and student predictable response were found.

The 10 highest ranking cell frequencies and their percentage of occurrence for the high-skilled and low-skilled groups were determined (Table 5). The recorded sequences

of behaviors suggest that teachers gave the high-skilled students greater opportunity for student interpretive response with fewer directions. This could result in the high-skilled students receiving more praise and having their ideas and actions accepted more often. The low-skilled students, however, spent a greater percentage of their class time receiving information and directions, followed by responding predictably, followed by receiving more directions, followed by responding predictably, and then followed again by more teacher information (5-6-8-5). This sequence does not allow the opportunity for the low-skilled student to receive as much praise or have their ideas and actions accepted.

The top interaction pattern for both groups was teacher direction followed by student predictable response (6-8). It should be noted that the low-skilled group received almost twice as much direction as did the high-skilled group. These findings support the results obtained earlier in this study which showed significantly more directions given to the low-skilled group. Table 5 revealed the percentage of occurrence for the pattern of student interpretive response followed by teacher praise (8\-2) to be 5.94 for the high-skilled group compared to 2.83 for the low-skilled group. This evidence supports the statistical data already revealed in this study, relating to the amount of praise directed by the instructor toward the high-skilled students. Teacher information giving followed by teacher directions also supported the results found earlier in the present study. The low-skilled students

received almost double the percentage of directions given to the high-skilled students. The results found on directions, praise, and student predictable response supported the rejection of the null hypothesis.

Further results of the present study revealed more interaction took place between the high-skilled students and their teachers than between the low-skilled students and their teachers.

The findings of the present study coincide with the study conducted at the elementary level by Martinek and Johnson (1979). The study by Martinek and Johnson had been the only study done in a physical education class using DAC to look at teachers' interactions with high achievers and low achievers. It should be noted, due to the lack of studies in physical education, research completed in general education classes will be used in comparison with the present results.

Martinek and Johnson (1979) found that high achievers received more praise, significantly more acceptance of ideas, and were asked more analytical questions; this coincides with the results of the present study relating to the high-skilled students. Studies conducted in education (Brophy & Good, 1970a, 1970b, 1974; deGroat & Thompson, 1949; Good, 1970; Good, Sikes, & Brophy, 1972) also support the present study concerning the amount of praise given to the high-skilled students compared to the amount received by the low-skilled students.

The low-skilled students received a significant percentage

of criticism from their instructors in this study compared to the criticism directed toward the high-skilled students. These same results were supported by studies done by Brophy and Good (1970a, 1970b, 1974) and Good et al. (1972). The study by Brophy and Good (1970b) revealed that teachers directed an average of six critical comments for every favorable one toward the low-achievement students. In the Good et al. (1972) study, the high-achievement students received more praise and less criticism than the low-achievement students. In the present study, the low-skilled students received more criticism than the high-skilled students; this coincides with Good et al. (1972).

In the present study, the significant use of acceptance of ideas and actions by teachers with the high-skilled students coincides with earlier findings by Martinek and Johnson (1979). Martinek and Johnson (1979), studying teachers' interactions through the use of the DAC, found the high achievers received a significantly greater acceptance of their ideas than the low achievers.

The present study also supports earlier findings by Martinek and Johnson (1979) on the variable of teacher questioning. In their study, a significantly greater number of analytical questions were found to be asked of the high achievers than the low achievers.

The use of teacher directions in this study does not support the results found by Martinek and Johnson (1979). The present study showed the low-skilled students receiving

a significantly greater amount of teacher directions, whereas in Martinek and Johnson (1979), the high-achievement students received a significantly greater amount of teacher directions.

The results of the present study found the low-skilled students to be more predictable in their responses and they initiated their behaviors more often. Past studies have not obtained any results which could be used to support the present findings. From these results, it might be assumed the high-skilled students feel more comfortable around teachers because of the initiative in their behavior along with the increase in interpretive responses. In looking at the results obtained in this study, the low-skilled student can be expected to respond more predictably, especially since they receive more directions than the high-skilled students.

In the present investigation, no significant difference between the teacher with the high-skilled group and with the low-skilled group was found on the variable teacher information giving. In reviewing the literature, there have been no other studies which have reported any significant differences concerning teacher information giving. It would be expected in a teaching setting to find all students receiving approximately the same amount of information regarding the class activity.

Further results of the present study revealed more interaction taking place between the high-skilled students and their teachers than between the low-skilled students and

their teachers. These findings are in accordance with those found by Martinek and Johnson (1979). Brophy and Good (1970b) and Good (1970) also recorded findings which support the present results relating to the high-skilled students being given more opportunity to interact with their teachers as compared to the interaction which takes place between the teachers and the low-skilled students.

It is hoped from the results obtained in this study, teachers will be more conscious of the way they are interacting with students in their classes, whether high-skilled or low-skilled. Teachers in the present study showed significant favoritism toward the high-skilled students. This type of behavior will tend to allow the high-skilled students to gain confidence in their own ability. The low-skilled students, however, were receiving negative reinforcement in their skill abilities. This caused the low-skilled students to dislike physical education classes which puts a strain on both the teacher and the student. It is necessary for the teachers to try to make adjustments in their teaching patterns so the low-skilled students will have the opportunity to develop some self-confidence in themselves as well as in the physical education program. Teachers must make the first move in helping the low-skilled students to gain confidence in themselves.

Summary

A MANOVA was performed on the nine DAC variables. Significant differences were found between the teaching

interactions with the high-skilled group and with the low-skilled group, $F(9,112) = 14.419$, $p < .001$. This led to the rejection of the null hypothesis which stated that there would be no significant difference between the teaching interaction behavior patterns of male secondary physical education instructors with high-skilled and with low-skilled students.

Following MANOVA, two follow-up tests were conducted. The first was a discriminant function analysis (Table 2) which revealed that teacher acceptance, teacher praise, student initiated behavior, and teacher questioning accounted for over 88% of the between-group variance. The second test, a series of univariate analyses of variance, resulted in significant differences on eight of the nine DAC variables at the .05 level of significance (Table 3). Teacher praise, teacher acceptance, teacher questioning, student interpretive response, and student initiated behavior revealed significant differences, with the high-skilled group having the greater percentage. Teacher directions, teacher criticism, and student predictable response revealed significant differences with the low-skilled group having the greater percentage.

Table 5 showed the top interaction pattern for both groups was teacher directions. It should be noted that the low-skilled group received almost twice the percentage of directions as did the high-skilled group. The sequence of behaviors recorded suggests that teachers gave the high-skilled students

a greater opportunity for student interpretive response with fewer directions given which resulted in more praise and acceptance of ideas given to the high-skilled students. The low-skilled students, on the other hand, spent the greater percentage of class time receiving information and directions followed by student predictable response which did not allow the opportunity for the low-skilled student to receive as much praise or to have their ideas and actions accepted.

Further results revealed that more interactions took place between the high-skilled students and their teachers than between the low-skilled students and their teachers.

The results of this study supported earlier evidence of high achievers receiving more praise, significantly more acceptance of ideas, and analytical questions found by Martinek and Johnson (1979) while studying dyadic interaction patterns occurring in physical education classes.

Chapter 6

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS FOR FURTHER STUDY

Summary

It was the purpose of this study to determine if male secondary physical education instructors' behavior patterns were different when interacting with high-skilled students and with low-skilled students. Fifteen male secondary physical education instructors (grades 7 through 12) from the central and western New York areas served as subjects. From each instructor's class there were 10 students chosen, for a total of 150 student participants.

Class instructors ranked their students from high skill ability to low skill ability prior to the taping of the first class. The top 33% were designated as the high-skilled; the bottom 33% were designated as the low-skilled students. Ten students were randomly selected to participate in the study, five from each of the two categories. Each student was identified by a numbered pinnie which he wore.

Data for analysis were collected from three videotapes made of every subject. The videotapes were then coded by an expert coder using the Dyadic Adaptation to CAFIAS to assess the teacher-student interaction taking place in each class.

A multivariate analysis of variance was used to determine significant differences in teaching behavior between the interactions of the teachers with the two groups. This analysis found significant differences between the teachers' interactions

with the two groups which led to the rejection of the null hypothesis which stated that there would be no significant difference between the teaching interaction behavior patterns of male secondary physical education instructors with high-skilled and with low-skilled students.

A discriminant function analysis revealed that teacher acceptance, teacher praise, student initiated behavior, and teacher questioning accounted for over 88% of the between-group variance. Univariate analysis of variance showed significant differences on eight of the nine DAC variables at the .05 level of significance. The high-skilled group had a greater percentage of teacher praise, teacher acceptance, teacher questioning, student interpretive response, and student initiated behavior. The low-skilled group received a greater percentage of teacher directions, teacher criticism, and student predictable response.

Conclusions

The results of this study led to the following conclusions regarding male physical education instructors' interaction behavior patterns toward high-skilled and low-skilled students:

1. Male physical education instructors were found to have greater interaction with the high-skilled students than with the low-skilled students.

2. The male physical education instructors exhibited more praise and acceptance of ideas when interacting with the

high-skilled students than with the low-skilled students.

3. The male physical education instructors directed more criticism and directions toward the low-skilled students than toward the high-skilled students.

4. The male physical education instructors were found to direct more questions toward the high-skilled students.

5. The male physical education instructors allowed more student interpretive responses along with more student initiated behavior when interacting with the high-skilled students.

6. The male physical education instructors received more student predictable response from the low-skilled students.

Recommendations for Further Study

1. Further replication of the present study could be undertaken at the elementary level.

2. Conduct a similiar study looking at teachers teaching the same activity to determine if the activity has an effect on the interaction taking place between the teacher and his students.

3. Further replication of the present study could be undertaken to compare any differences in interactions which occur between male and female teachers with high-skilled and with low-skilled students.

Appendix A

CODER'S RELIABILITY FOR SELECTED SUBJECTS USING SPEARMAN'S r_s

Teacher 1*

Top 10 Cells	Rank Observation One	Rank Observation Two	d	d^2
8-5	1	1	.00	.00
4-8\	2	2	.00	.00
5-8	3	3	.00	.00
6-8	4	4	.00	.00
8\-3	5	6	1.00	1.00
5-4	6	5	1.00	1.00
3-5	7	7	.00	.00
8\-8\	8	8	.00	.00
5-5	9	9.5	.50	.25
5-6	10	9.5	.50	.25
Total				2.50

*r_s = .985.

Top 10 cells listed refer to the order of coder's numerical frequency.

Rank observation one and observation two refer to the origin of the coding.

d refers to the differences between the ranks of each cell for observation one and observation two.

d^2 refers to the d column squared.

Appendix A (continued)

CODER'S RELIABILITY FOR SELECTED SUBJECTS USING SPEARMAN'S r_s

Teacher 2*

Top 10 Cells	Rank Observation One	Rank Observation Two	d	d^2
6-8	1	1.5	.50	.25
4-8	2	1.5	.50	.25
5-4	3.5	4	.50	.25
8-5	3.5	3	.50	.25
5-6	5	5	.00	.00
2-5	6	8.0	2.00	4.00
5-8	8.5	8.0	.50	.25
7-2	8.5	8.0	.50	.25
8-3	8.5	8.0	.50	.25
8-6	8.5	8.0	.50	.25
Total				6.00

*r_s = .964.

Top 10 cells listed refer to the order of coder's numerical frequency.

Rank observation one and observation two refer to the origin of the coding.

d refers to the differences between the ranks of each cell for observation one and observation two.

d^2 refers to the d column squared.

Appendix B

INFORMED CONSENT FORM

TEACHER COPY

The study in which you are asked to participate is looking at the interaction behavior patterns of male secondary physical education instructors with their students.

The following procedures will be used: you will be videotaped on three days. The period that you will be videotaped will be 30 minutes in length. During those periods you will be wearing a microphone which should not interfere with your teaching activities. You will be asked to fill out a questionnaire prior to the taping of the first class. The questionnaire will be a ranking of students from high skill ability to low skill ability. The time needed to fill out the questionnaire will be approximately 10 minutes. Ten students, from the results of your rankings, will be asked to wear a pinnie for the purpose of identification on the videotape.

It is assured that all information about you will be kept strictly confidential. If you do not have any questions, and if you are willing to participate in the study, please sign your name on the line below.

Name: _____

Date: _____

Appendix C

INFORMED CONSENT FORM

STUDENT COPY

The study in which you are asked to participate is looking at the interaction behavior patterns of male secondary physical education instructors with their students.

The following procedures will be used: you will be videotaped on three days. The period that you are videotaped will be 30 minutes in length. During this time you will be wearing a numbered pinnie for process of identification on the videotape. The pinnie will be given to you by your instructor.

It is assured that all the information about you will be kept strictly confidential. Your name will not be known by the researcher. If you do not have any questions, and if you are willing to participate in this study, please sign your name below.

Name: _____

Date: _____

Appendix D

THE CATEGORIES OF CAFIAS[1]

Categories 2 - 17 Teacher Behaviors

" 8 - 19 Student Behaviors

" 10 Confusion

" 20 Silence

Relevant Behaviors

Categories	Verbal	Nonverbal
2-12	2	12
	(A positive value assessment) Praises, commends, jokes, encourages.	Face: Smiles, nods with smile, (energetic) winks, laughs. Posture: Applause through clapping hands, congratulatory pats on shoulder, head, etc., wrings student's hand, embraces joyfully, laughs to encourage.

Appendix D (continued)

Relevant Behaviors

Categories	Verbal	Nonverbal
3-13	(No value implied) Accepts, clarifies, uses, and develops suggestions and feelings by the learner. N.B. Flanders' category one which refers to teacher acceptance of student feelings and emotions is included in this category. Coders are reminded to use 1 and 11 on the tally sheets. These behaviors are tallied separately for parameter purposes in the matrix as 3's and 13's.	(Elevates student performance onto a par with teacher performance) Face: Nods without smiling, tilts head in empathetic reflection, sighs empathetically. Posture: Shakes hands, embraces sympathetically, places arm around shoulder or waist, catches an implement thrown by student, accepts facilitation from students, takes part in game with students, supports child during activity, spotting in gymnastics.

Appendix D (continued)

Relevant Behaviors

Categories	Verbal	Nonverbal
4-14	4	14
	Asks questions requiring student answer.	Face: Wrinkles brow, opens mouth, turns head with quizzical look. Posture: Places hands in air quizzically to expect answer, stares awaiting answer, scratches head, cups hand to ear, stands still half turned toward person, awaits answer.
5-15	5	15
	Gives facts, opinions, expresses ideas or asks rhetorical questions.	Face: Whispers words inaudibly, sings or whistles. Posture: Gesticulates, draws, writes, demonstrates activities, paints, points to board.

Appendix D (continued)

Relevant Behaviors

Categories	Verbal	Nonverbal
6-16	6 Gives directions or orders which will result in immediate observable student response.	16 Face: Points with head, beckons with head, yells at using language other than recognizable words. Posture: Points finger, blows whistle, holds body erect while barking commands, pushes a child in a given direction.
7-17	7 (A negative value assessment.) Criticism, expresses anger or distrust, sarcastic or extreme self-reference.	17 Face: Grimaces, growls, frowns, drops head, throws head back in derisive laughter, rolls eyes, bites, spits, butts with head, shakes head. Posture: Hits, pushes away, pinches, grapples with, pushes hands at student, drops hands in disgust, bangs table, damages equipment, throw things down.

Appendix D (continued)

Relevant Behaviors

Categories	Verbal	Nonverbal
8-18	8	18
	Student response that is entirely predictable, such as obedience to orders and responses not requiring thinking beyond the comprehension phase of knowledge (after Bloom).	Face: Poker-face response, nods, shakes, gives small grunts, quick smile. Posture: Moves mechanically to question or directions, responds to any action with minimal nervous activity, robot-like, practices drills, awaits in line, etc., student responds by putting hand up in answering to teacher direction.

Appendix D (continued)

Relevant Behaviors

Categories	Verbal	Nonverbal
8\-18\	Eine (8\)	Eineteen (18\)
	Predictable student responses that require some measure of evaluation, synthesis, and interpretation from the student but must remain within the province of predictability. The initial behavior was in response to teacher initiation. Student interpretation from teacher in discussed activity. A student questioning when related strictly to topic under discussion.	Face: Look of thinking eyes, pensive formal expressions. Posture: Interprets movements, tries to show some arrangement that requires interpretive thinking; e.g. works on gymnastic routine; test taking; interpretation of task cards; all game playing. Student puts hands in air in order to give answer to teacher question.

Appendix D (continued)

Relevant Behaviors

Categories	Verbal	Nonverbal
9-19	9	19
	Pupil-initiated talk that is purely the result of their own initiative and which could not be predicted, (either positive or negative behavior).	Face: Makes interrupting sounds, gasps, sighs. Posture: Puts hands up in air to ask (unsolicited) question of teacher, gets up and walks around without provocation, begins creative movement education, makes up own games, makes up own movement, introduces new movements into games not predictable in the rules of the game.
10-20	10	20
	Stands for confusion, chaos disorder, noise.	Face: Silence, children sitting doing nothing noiselessly awaiting teacher just prior to teacher entry, etc.

[1]Cited from Cheffers, Amidon, and Rodgers (1974).

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